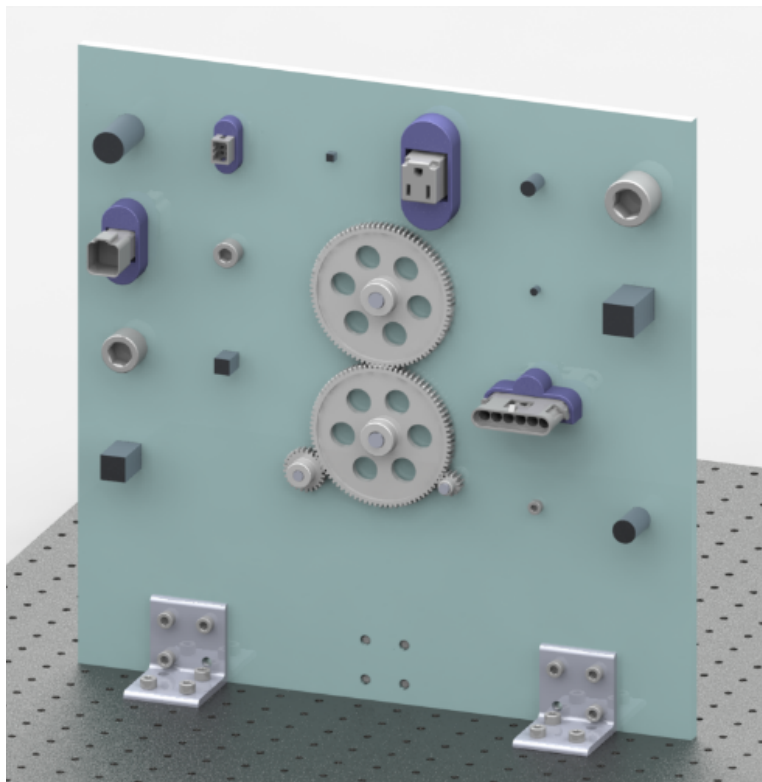


Overview of the IROS 2017 Manufacturing Track

The manufacturing track of the IROS 2017 Robotic Grasping and Manipulation Competition will consist of two tasks. The first task will be comprised of a series of assembly and disassembly operations using an assembly task board. This concept of a task board is being used to develop [tools for benchmarking the performance of assembly robotics](#).

Task 1: Manufacturing Task Board

A manufacturing task board is premade and placed on a table alongside a bowl. During the first subtask, screws, gears, pegs, and male electrical connectors are already inserted on the board. The goal is to remove all screws, gears, pegs, and male connectors from the board, and place them in the bowl. During the next subtask, the same task board and parts will be used where screws, gears, pegs, and male electrical connectors are placed in a tray. Parts may be presented either exactly at predefined locations or randomly. The goal is to remove all screws, gears, pegs, and male connectors from the kit, and place them in the task board. The board, components and all CAD models will be made available to competitors (the details will be announced later).



Overview of the IROS 2017 Manufacturing Track (Cont.)

Task 2: Gear Unit

The gear unit can be assembled from one base plate, two roller bolts, two collars, two different sized spur gears (bearing built-in type), two washers, and two nuts. All parts will be available from MISUMI online (the details will be announced later). CAD models will also be supplied.

The task will be divided into three subtasks. Each subtask starts from a given initial condition so that teams who fail a subtask can easily move on to the next subtask. Parts may be presented either exactly at predefined locations or randomly. The use of fixtures to aid in the assembly process will be allowed.

Bonus points will be given if teams select difficult conditions, such as random initial locations and no fixtures. Teams are also encouraged to let their robot use hand tools for tightening roller bolts and nuts with predefined torques but such difficult operations can be skipped.

The task is tentative and may be subject to change, depending on the results of submitted qualification tasks. Detailed rules including scoring is TBD.



The gear-unit assembly will also serve as a trial task for the assembly challenge to be held in the Industrial Robotics Category at [World Robot Challenge](#), [World Robot Summit](#).